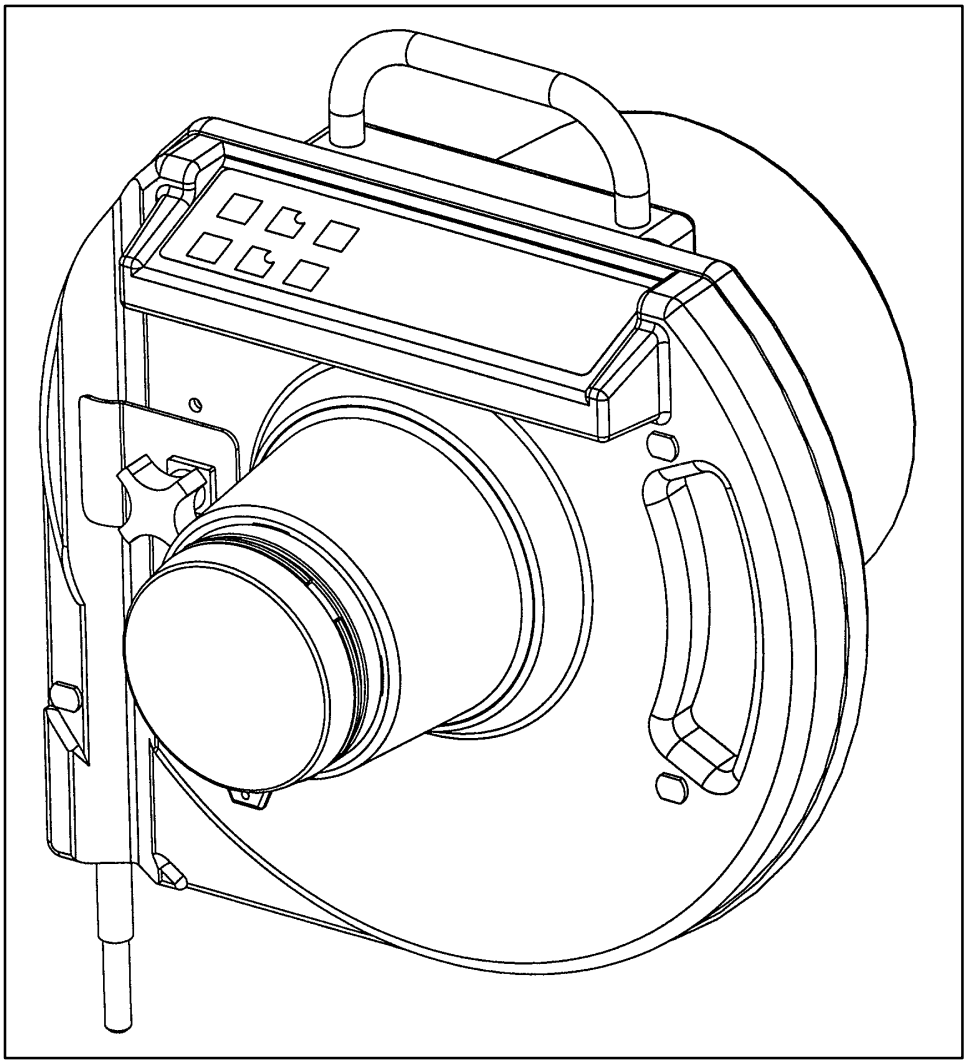
IMPORTANT
Keep manual with warmer at all times.

stryker®
Patient Handling



Thermaltek™ 300 “Plus” Portable Warmer

OPERATIONS/MAINTENANCE MANUAL

For Parts or Technical Assistance
1–800–327–0770

Table of Contents

Portable Warmer Operation

- WARNINGS 2
- INTRODUCTION 3
- SPECIFICATIONS 3
- WARNING / CAUTION / NOTE DEFINITION 3
- CLEANING 3
- PRE–OPERATION SET–UP 4
- OPERATING WARMER 5–7
- OVERLAY SPECIFICATIONS 8
- PORTABLE WARMER SAFETY FEATURES 9
- PORTABLE WARMER SUPPORT POST 10
- USING THE I.V. POLE ATTACHMENT SYSTEM 10

Troubleshooting Guide 11

Fuse Replacement 11

Filter Replacement 12

Assembly Drawings and Parts Lists

- BASE ASSEMBLY 13
- HOSE ASSEMBLY 14
- SHELL AND HOSE ASSEMBLY 15

WARNING

- Read and understand all information in this manual before using the Thermaltek™ 300 "Plus" Portable Warmer.
- Federal law (U.S.A.) restricts this device to sale by or on the order of a licensed health care professional.
- During warming therapy, the clinician is responsible for monitoring the patient's condition. It is recommended that the patient's skin condition, body core temperature, and vital signs be monitored at a minimum of 15 minute intervals. If monitoring does not occur, thermal injury may result, especially if the patient has the following conditions:

  a. Significant peripheral vascular disease (occlusive or diabetic).
  b. Low cardiac output.
  c. Totally immobilized/anesthetized.
  d. Marginal cutaneous perfusion.

  Do not use the High temperature setting (110° F) if the patient has any of the conditions (a, b, c or d) listed above.

  Reduce air temperature or discontinue warming therapy when therapeutic goal is reached, vital sign instability occurs or if the patient's skin condition is compromised in any way.

  This warming system is not intended for use with other external warming devices.
- The Thermaltek™ "Plus" Portable Warmer must only be used with a Thermaltek™ overlay. Use of any other warming blanket may result in thermal injury.
- The Thermaltek™ overlay must only be used with the Thermaltek™ "Plus" Portable Warmer. Using a Thermaltek™ overlay with any other warming unit may result in thermal injury.
- The temperature settings on the Thermaltek™ 300 "Plus":
  High 110° ± 5° F (43° ± 3° C),
  Medium 100° ± 5° F (38° ± 3° C),
  Low 90° ± 5° F (32° ± 3° C),
  are average temperatures at various points around the patient and under the overlay based on a specific testing protocol. The actual temperature of the air at various points around the patient and under the overlay is determined by different factors including, but not limited to, ambient temperature and use of insulating blankets.
- The Thermaltek™ 300 "Plus" Portable Warmer is equipped with an Automatic Temperature Step–Down (ATS) feature (see page 9 for details) that automatically lowers the temperature from high to medium after 20 minutes of continuous operation. A brief alarm sounds as the temperature changes. Manual resetting is required to select a new temperature. The ATS feature does not preclude the clinician from monitoring the patient's skin condition throughout the usage of the warmer. The patient's skin condition must always be monitored at a minimum of 15 minute intervals to prevent patient injury.
- Inspect warmer for damage prior to use. If damage is present or warmer has been dropped, do not use the warmer. Contact your Stryker Service representative.

Portable Warmer Operation

INTRODUCTION

This manual is designed to assist you with the operation of the Thermaltek™ 300 ”Plus” Portable Warmer. Read it thoroughly before using the equipment. The 300 ”Plus” Portable Warmer is for use by qualified medical personnel only.

SPECIFICATIONS

Dimensions: Depth x Width x Height	13” x 13” x 18” (including handle & support post)
Dimensions (with Base): Depth x Width x Height	22” x 22” x 42”
Weight	10.5 pounds
Weight (with Base and Overlay Bag)	22 pounds
I.V. Pole Attachment System (I.V. Pole Diameter)	5/8” – 1 3/8”
I.V. Pole Socket Support Post (I.V. Pole Socket Diameter)	3/8” – 1/2” (without adaptor)
Electrical Requirements	115 VAC, 60 Hz, 8.0 Amp

NOTE
A ground connection is available on the 300 ”Plus” Portable Warmer. It is located next to the power cord and is marked with the symbol .

WARNING / CAUTION / NOTE DEFINITION

The words WARNING, CAUTION and NOTE carry special meanings and should be carefully reviewed.

WARNING

The personal safety of the patient or user may be involved. Disregarding this information could result in injury to the patient or user.

CAUTION

These instructions point out special procedures or precautions that must be followed to avoid damaging the equipment.

NOTE

This provides special information to make maintenance easier or important instructions clearer.

CLEANING

Be sure warmer is unplugged before cleaning. Hand wash all surfaces of the warmer with a damp cloth and mild detergent. Dry thoroughly.

The warmer hose material is a non water permeable 200 denier urethane coated nylon. It can be cleaned by wiping it with a standard hospital cleaning/disinfecting solution.

CAUTION

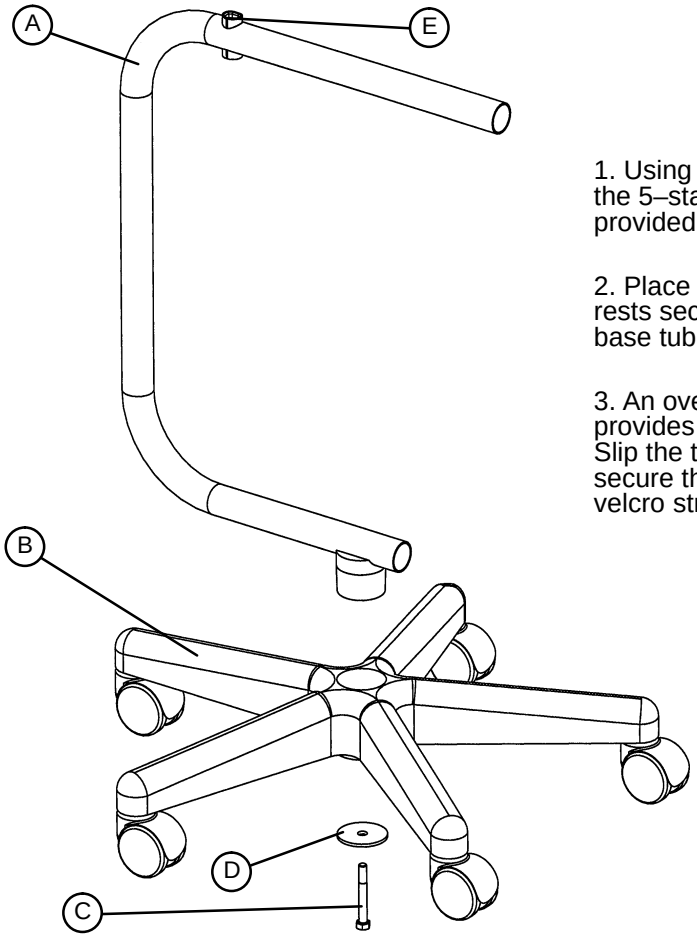
Do not steam clean or hose off the 300 ” Plus” Portable Warmer. Do not immerse any part of the warmer. Some of the internal parts of the warmer are electric and may be damaged by exposure to water.
To reduce the risk of shock, DO NOT REMOVE COVER. Refer servicing to qualified service personnel.

PRE–OPERATION SET–UP

WARNING

All electrical medical devices must be tested by qualified personnel for leakage current prior to operation.

Assembly of the Thermaltek™ 300 mobile base/stand is required:



1. Using a 3/8” wrench, attach the base tube (A) to the 5–star base (B) with the bolt (C) and washer (D) provided.

2. Place the warmer on the base so the support post rests securely inside of the socket (E) on top of the base tube.

3. An overlay storage bag is available (not shown) and provides 3 storage compartments for warmer overlays. Slip the top loop over the top of the base tube and secure the bag to the bottom of the base tube with the velcro strap.

WARNING

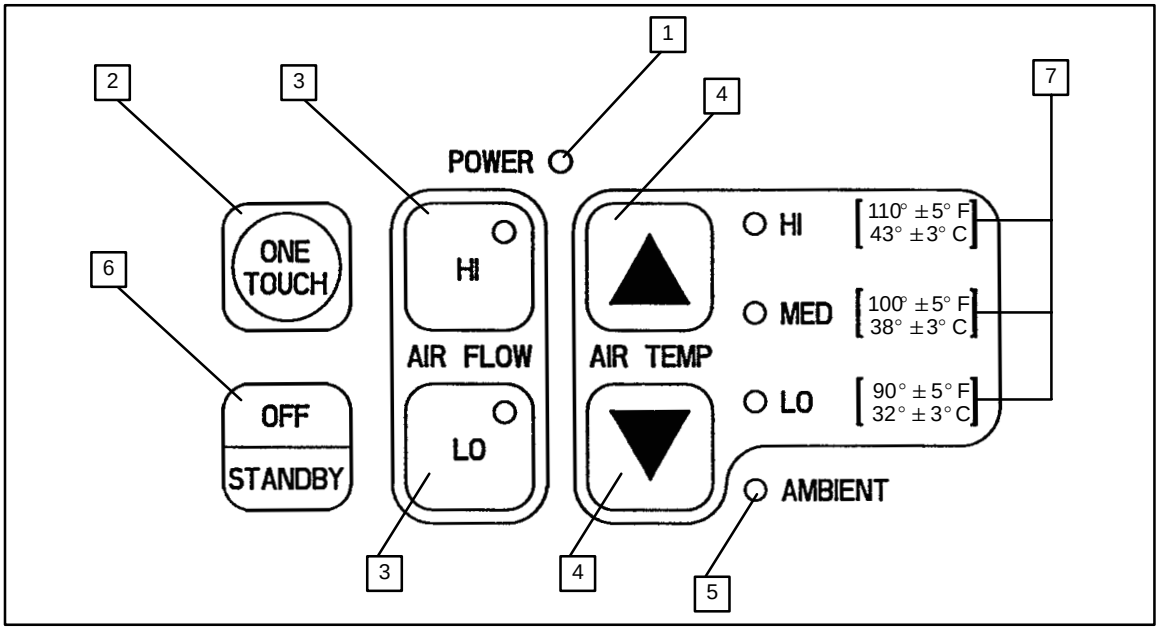
The 300 ”Plus” Portable Warmer is equipped with a hospital grade plug for protection against shock hazard. It must be plugged directly into a properly grounded three–prong receptacle. Grounding reliability can be achieved only when a hospital grade receptacle is used. Risk of explosion if used in the presence of flammable anesthetics.

Inspect warmer for damage prior to use. If damage is present or warmer has been dropped, do not use the warmer. Contact your Stryker Service representative.

DO NOT operate the warmer with the dust cap on or without fully extending the warmer hose.

Portable Warmer Operation

OPERATING WARMER



1 POWER light indicates when the warmer power cord is plugged into the wall socket.

2 Press the ONE TOUCH key to immediately set the air flow speed on **medium** and the air temperature on **high**. Or...

3 Press the HI or LO key to select air flow speed. The warmer fan will start when a temperature is selected. The LED on the key will light to indicate which air flow speed is selected.

4 Press and release the ▲ or ▼ key to select an air temperature setting (HI, MED or LO). The corresponding LED will light. The warmer fan will begin operating. The Thermaltek 300 ”Plus” Portable Warmer is equipped with a ”step–down” feature that automatically lowers the warmer temperature from high to medium and sounds a brief alarm (3 beeps) after 20 minutes of continuous operation (see page 9).

5 AMBIENT light indicates room temperature air is being circulated. To circulate ambient air, press and release the ▼ key until the AMBIENT light comes on.

6 Press OFF/STANDBY to stop warmer operation. The heater and fan will stop and air will stop circulating.

7 The temperature values indicated on the control panel represent the average temperature of the air at various points around the patient and under the overlay and are based on specific conditions and test protocol (see page 9 for details). The values have been rounded to the nearest degree. The actual temperature of the air around the patient is affected by the room temperature and the use of insulating blankets.

OPERATING WARMER (CONTINUED)

INDICATIONS
For patient warming

CONTRAINDICATIONS
Do not apply heat to lower extremities during aortic cross–clamping. Thermal injury may occur if heat is applied to ischemic limbs.

1. Place the overlay directly on top of the patient, with the perforated side on the patient's body.
2. Remove the cap from the hose. DO NOT operate the warmer with the dust cap on or without fully extending the warmer hose.
3. If the hose is retracted, twist the connector to the left or right to align the four tabs. The hose will spring out. Continue to pull out the hose until the inside connector is centered and the four tabs are outside the warmer housing. Twist the hose or the inside connector to lock it in place.
4. To connect the hose to a warming overlay, select an inlet on the overlay. Remove the foam core from the center of the inlet. Grasp the hose connector around the wide raised ridge. While holding the inlet tab on the overlay, insert the hose, bottom first. Pull the overlay inlet firmly over the hose connector so the inlet covers at least the first ridge on the connector. (Pulling the inlet over the wide second ridge provides a more secure connection). If an overlay inlet is accidently opened, an adhesive label is provided in the overlay package to re–seal the opening.
5. To maximize effectiveness, place a cotton blanket over the top of the overlay. Do not place sheets or blankets between the overlay and the patient.

WARNING

- When using the full–body and lower–body overlays, the urethane hose connector must be positioned so that the hose as it leaves the blanket is parallel to the center tubes of the overlay.
- When using the upper–body overlay, the urethane hose connector must be positioned so that the hose as it leaves the blanket is perpendicular to the center tubes of the overlay.
- Position the warmer hose so that the air flow is not restricted.
- The perforated fabric–like side of the overlay must be placed against the patient's skin to ensure safe usage. Do not place the polyethylene side of the overlay next to the patient's skin or thermal injury could result.
- During warming therapy, the patient's wounds should be covered. If the patient's wounds are infected, the possibility of airborne contamination should be considered.
- Before beginning warming therapy, be sure the patient is dry. If warming therapy is started on a wet patient, a cooling effect will occur.
- Warming overlays are not sterile and are intended for single patient use only. Placing a sheet between the warming overlay and the patient does not prevent contamination. Re–use of the warming overlay may cause cross–contamination.
- Do not sterilize the warming overlays. Materials have not been proven compatible with any sterilization method. Ethylene Oxide sterilization may leave toxic residue on the warming overlay.
- To prevent suffocation from misuse, do not leave children or infants unattended when administering warming therapy.
- Avoid direct contact of a laser or an electro–surgical active electrode with overlay material to avoid possible ignition.

OPERATING WARMER (CONTINUED)

6. Plug warming unit into a properly grounded wall receptacle and ensure the power light comes on.
7. Activate the warmer by pressing the ONE TOUCH key or press an air flow and an air temperature key to activate the desired settings.

NOTE
If the HI or LO key is pressed prior to the ONE TOUCH key, the warmer will not activate until a temperature setting is selected.

8. Select the initial temperature setting based on the patient's condition as per protocol.
   Ambient air for mild cooling.
   Low 90° ± 5° F (32° ± 3° C) long term therapy for temperature maintenance.
   Medium 100° ± 5° F (38° ± 3° C) for immobilized/anesthetized patients or those with poor perfusion.
   High 110° ± 5° F (43° ± 3° C) for patients who are moving all extremities and have normal lower extremity cutaneous perfusion.

WARNING

The following maximum recommended temperatures may be used as a guide, however, the ultimate decision is the responsibility of the attending physician. The patient's skin condition, core temperature and vital signs must be monitored every 15 minutes and the temperature adjusted accordingly.

Patient Condition	**Maximum Recommended Temperature**
Aortic Cross–Clamping	Do Not Apply Heat
Significant Vascular Disease (occlusive or diabetic)	Medium
Low Cardiac Output	Medium
Totally Immobilized/Anesthetized	Medium
Marginal Cutaneous Perfusion	Medium

WARNING

Monitor the patient's core, axillary or skin temperature and skin condition at a minimum of 15 minute intervals during the warming therapy. Reduce air temperature or discontinue therapy when the therapeutic goal is reached, if vital sign instability occurs, or if the patient's skin condition is compromised in any way. Notify physician of vital sign instability immediately. Temperature in excess of the therapeutic goal may result from failure to monitor the patient's temperature every 15 minutes. See CONTRAINDICATIONS for patients who should not receive therapy.

9. Following warming therapy, the hose can be tucked inside the warming unit and secured by twisting the hose connector until it fits securely in the warmer housing. Seal the hose cap over the retracted hose to prevent dust from collecting. The hose can also be stored in the extended position by attaching the end of the hose to the hose cap.
10. The hose can be removed from the warmer if it becomes damaged or soiled. Pull the hose out until the inside connector is visible. Instead of centering the connector as for normal operation, turn it perpendicular to the warmer opening. Squeeze the connector to flatten it, align it with the opening notches and remove it from the warmer. To reattach the hose perform these steps in reverse.

OVERLAY SPECIFICATIONS

Materials: Polyolefin = Polyethylene + Polypropylene Inlet Rings = Polyethylene Foam
Incinerability: Results in 98% water and 2% ethylene gas (2% ethylene gas is less than the percentage in the air we breathe)

Full–Body Overlay (92” long x 55” wide)

Upper–Body Overlay (90” long x 30” wide)

Lower–Body Overlay (58” long x 55” wide)

OVERLAY PART NUMBERS

PACU–FB Full Body – Part Number 300–50–00
OR–UB Upper Body – Part Number 300–52–00
OR–LB Lower Body – Part Number 300–54–00
Overlay Storage Bag – 300–68–10

300 ”PLUS” PORTABLE WARMER SAFETY FEATURES

ALARMS

The warmer is equipped with high and low temperature alarms. If alarm sounds, press the OFF/STANDBY key to silence the alarm.

High Alarm: Whether the temperature setting is on high, medium or low, when the sensor determines that the internal temperature of the unit is above the desired range for the setting, it automatically shuts the heater and fan off. The HI LED will flash and an alarm will sound. Press OFF/STANDBY to silence the alarm. Note: Refer to the troubleshooting guide on page 11 to help determine the cause for the alarm. After correcting the problem, reset the desired temperature and air flow settings.

Low Alarm: Whether the temperature setting is on high, medium or low, when the sensor determines that the internal temperature of the unit is below the desired range for the setting, it automatically shuts the heater and fan off. The LO LED will flash and an alarm will sound. Press OFF/STANDBY to silence the alarm. Note: Refer to the troubleshooting guide on page 11 to help determine the cause for the alarm. After correcting the problem, reset the desired temperature and air flow settings.

AUTOMATIC TEMPERATURE STEP–DOWN

The Thermaltek 300 ”Plus” Portable Warmer is equipped with Automatic Temperature Step–Down, a feature that automatically lowers the warmer temperature from high to medium and sounds a brief alarm (3 beeps) after 20 minutes of continuous operation. The warmer will remain on the medium setting until another temperature is selected. Any time the high temperature button is pressed, the internal clock will automatically reset and another 20 minute period will start.

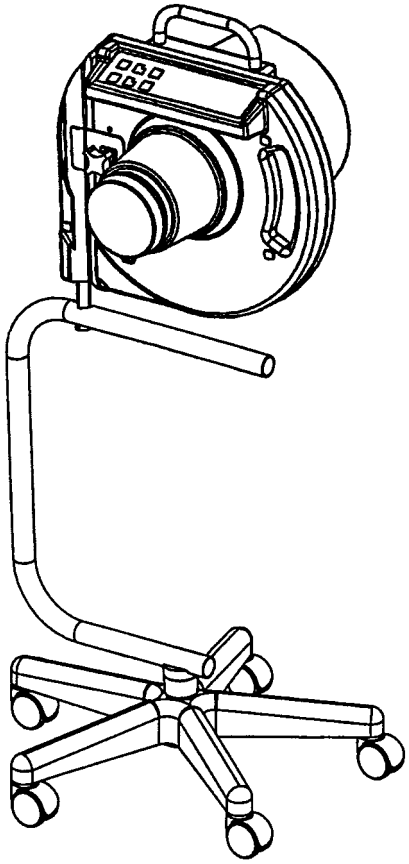
WARNING

The Automatic Temperature Step–Down feature does not preclude the clinician from monitoring the patient’s skin condition throughout the usage of the warmer. The patient’s skin condition must **always** be monitored at a minimum of 15 minute intervals to prevent patient injury.

PORTABLE WARMER TEST PROTOCOL

- Room temperature is between 75° F and 80° F.
- A Thermaltek™ overlay is placed on a standard stretcher mattress and a single cotton blanket is placed over the overlay.
- The warmer hose is positioned as recommended.
- The warmer is set on high fan speed.
- Temperature readings are taken from thermocouples spaced under the center of the overlay. Average temperature readings are taken once the temperature under the overlay has stabilized.

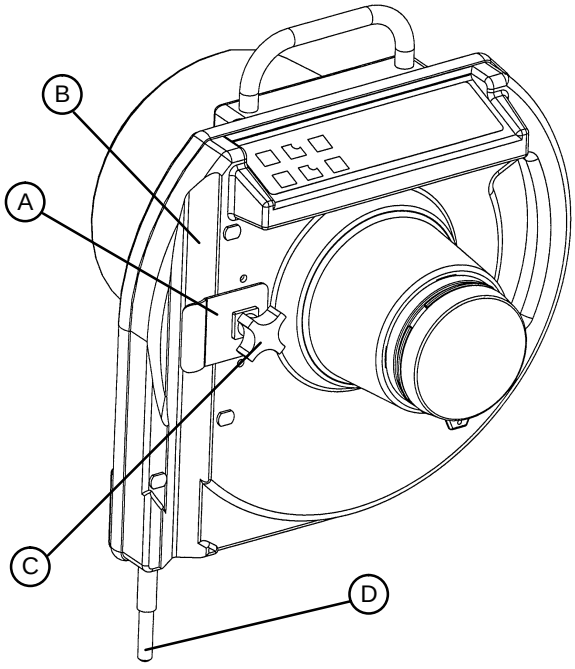
300 ”PLUS” PORTABLE WARMER SUPPORT POST



The ”Plus” Portable Warmer support post (item (D) in the illustration below) is a dual diameter post with multiple functions:

1. The support post is designed so it only fits into the socket on the base one way. The warmer rests securely in the socket on the warmer base and allows the use of the top handle on the warmer for moving the warmer around while it is attached to the base.
2. The support post fits into either foot board socket on Stryker stretchers. Since the ”Plus” Portable Warmer only has one support post, it allows flexibility in placement.
3. The support post allows the warmer to be placed in any standard 1/2” I.V. pole socket on a stretcher or bed. Special adaptors that allow the warmer to rest in larger I.V. sockets (5/8” – 1”) may also be purchased.

USING THE I.V. POLE ATTACHMENT SYSTEM



An I.V. pole attachment system is included on all ”Plus” Portable Warmers. It consists of a clamp mechanism (A) and a vertical support groove (B). Loosen knob (C), slide the I.V. pole behind the clamp (A) until it rests in the groove (B) and tighten knob (C) until the I.V. pole is secure.
The I.V. pole attachment system allows the warmer to be clamped to I.V. poles ranging from 5/8” to 1 3/8” in diameter.

Troubleshooting Guide

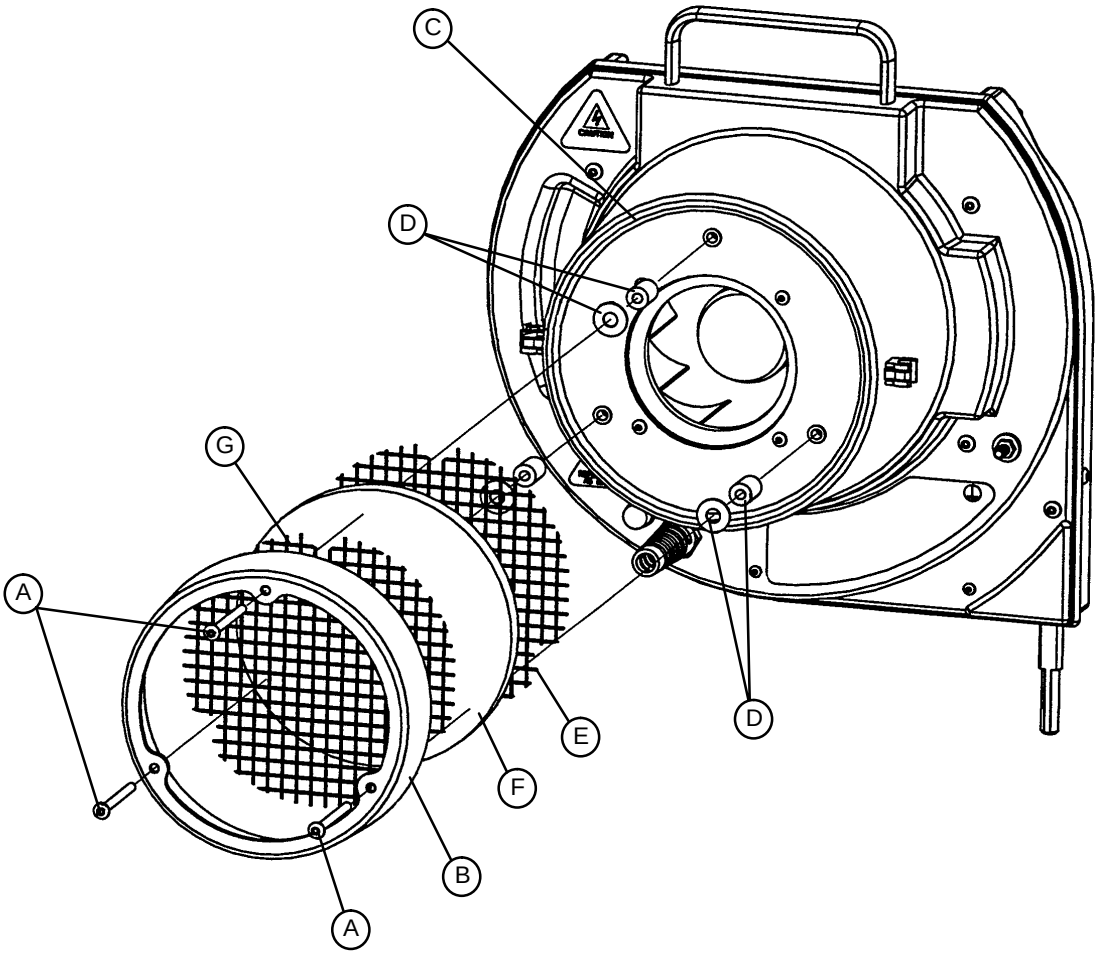
Problem	Possible Cause	Action
Warmer won't turn on. No power LED.	Main thermostat may have activated. Power cord not plugged into wall socket. Blown fuse.	Ensure hose and air inlet are clear of any obstructions. Assure power cord is plugged into the wall socket. Check fuse and replace, if necessary (see below).
High alarm sounds (HI temperature LED flashes).	Hose is obstructed. Warmer air inlet is blocked. Filter is dirty.	Ensure hose and air inlet are clear of any obstructions. Reset warmer temperature and air flow settings. Replace filter.
Warmer shuts off (no alarm sounds).	Hose is obstructed. Warmer air inlet is blocked.	Ensure hose and air inlet are clear. Allow warmer to cool until green power LED comes on (approximately 5 minutes). Reset warmer temperature and air flow settings.
Low alarm sounds (LO temperature LED flashes).	Overlay disconnected from hose.	Reattach overlay. Reset warmer temperature and air flow settings.
High alarm sounds repeatedly after all obstructions are resolved.	Temperature sensor possibly defective.	Discontinue use of warmer. Contact Stryker representative.
Warmer shuts off (no alarm sounds) repeatedly.	Temperature sensor possibly defective.	Discontinue use of warmer. Contact Stryker representative.
Low alarm sounds repeatedly.	Temperature sensor possibly defective.	Discontinue use of Warmer. Contact Stryker representative.

FUSE REPLACEMENT

The main power fuse (part number 59–57) is located on the outer shell and is marked by the label at left. When installing a fuse, be sure to replace it as indi–cated on the label.

NOTE
If a problem occurs with the operation of your 300 "Plus" Portable Warmer unit within 5 years from the date of purchase, it can be exchanged for a replacement warmer. The 5 year warranty will continue from the *original* date of purchase. This 5 year warranty does not include the warmer's filter, base assembly or overlay storage bag.

Filter Replacement



Required Tools:

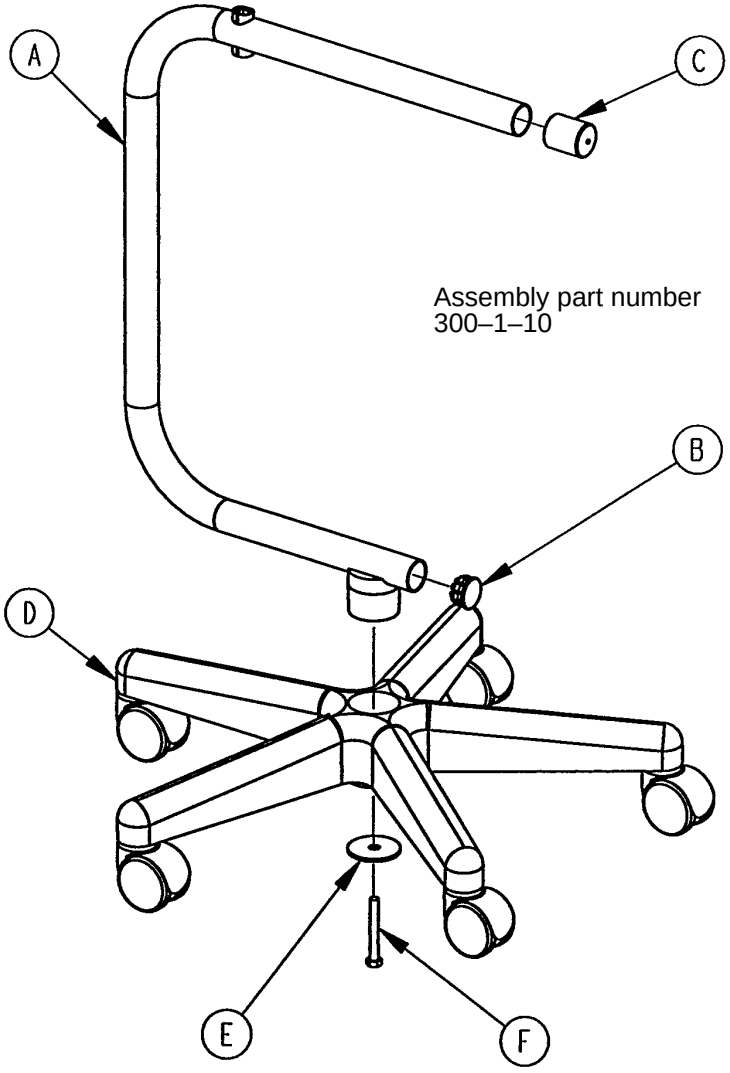
1/8” T–Handle Hex Allen Wrench

Filter Part Number 300–30–37

Replacement Procedure

1. Remove the 3 cap screws (A) holding the inlet cap (B) to the inlet shell (C). The nylon washers and stand-offs (D) will come loose when the cap screws are removed. Retain them for reuse.
2. Remove the inner inlet screen (E) and the air filter (F). Place the replacement filter on top of the outer inlet screen (G) and replace the inner screen (E), standoffs and washers (D) and cap screws (A).
3. Replace the filter every 4–6 months or if the filter appears soiled.

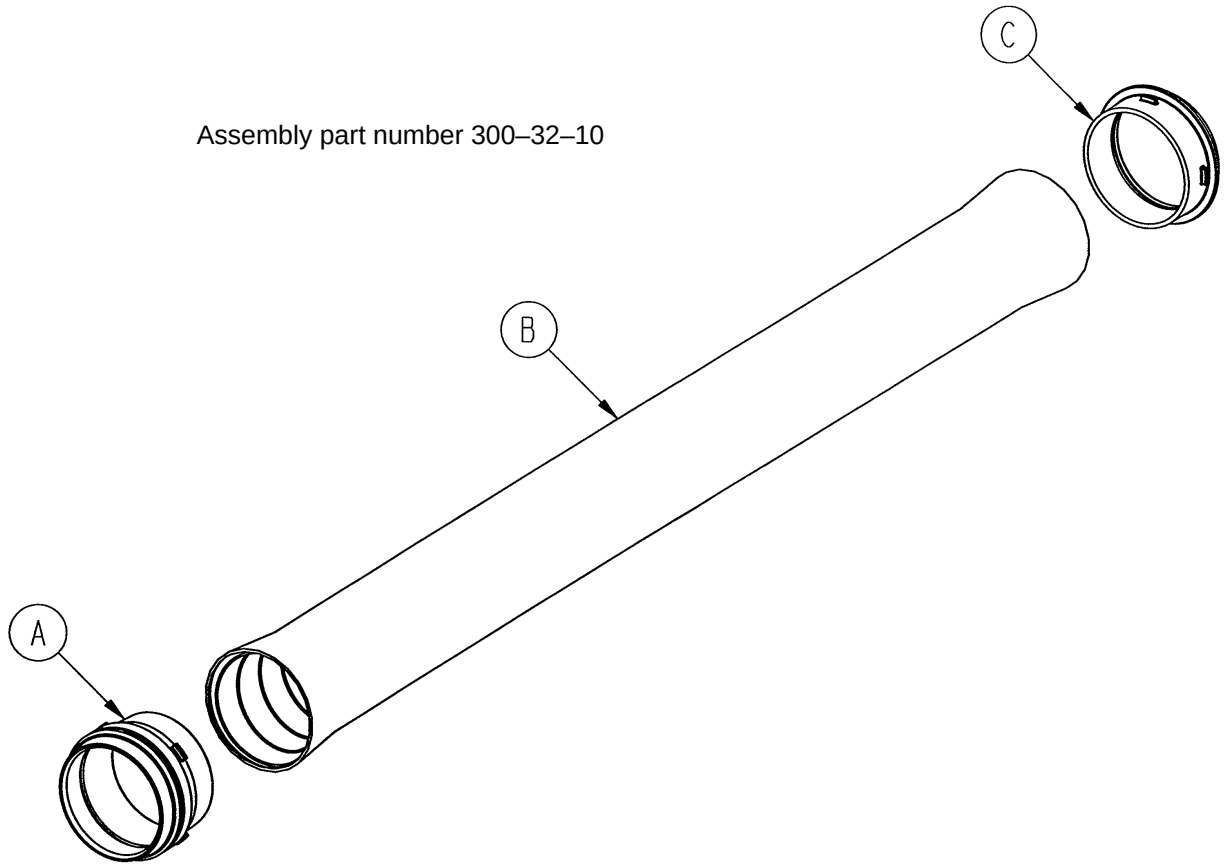
Base Assembly



Item	Part No.	Part Name	Qty.
A	300–1–52	Base Tube Weldment	1
B	37–199	Tube Closure	1
C	37–81	Tube Plug	1
D	300–1–41	Star Base w/Casters	1
E	390–38–5	Support Plate	1
F	3–82	Hex Hd. Cap Screw	1

Hose Assembly

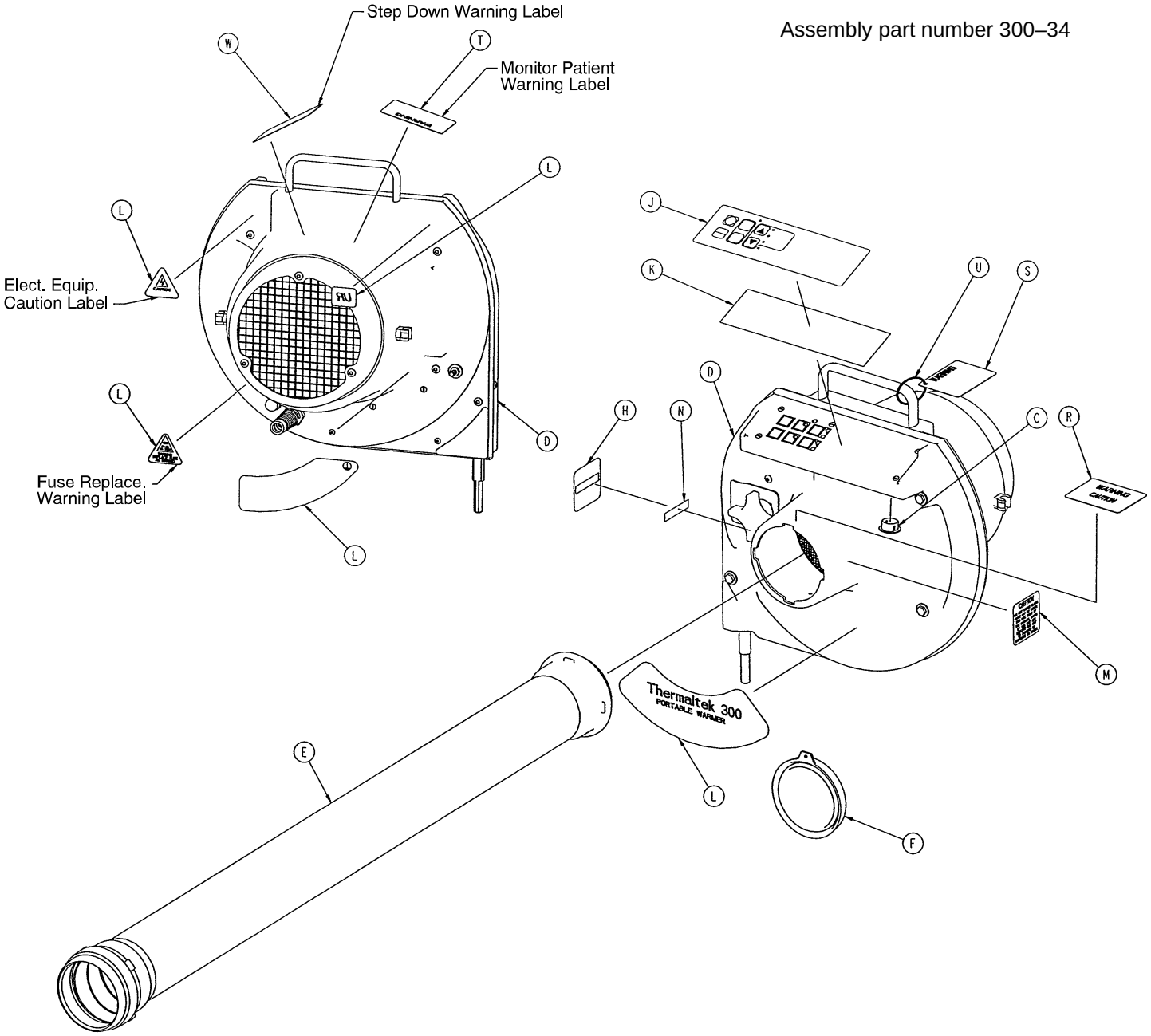
Assembly part number 300–32–10



Item	Part No.	Part Name	Qty.
A	300–32–40	Hose Attachment	1
B	300–32–41	Hose Sleeve Assembly	1
C	300–32–45	Hose End Connector	1

Shell and Hose Assembly

Assembly part number 300–34



Item	Part No.	Part Name	Qty.	Item	Part No.	Part Name	Qty.
A	11–52	Flat Washer	2	L	300–90–5	Label, Combo	1
B	54–200–917	Packaging	1	M	300–90–6	Label, Caution Clean	1
C	37–30	Hole Plug	1	N	921–1–252	Label, Serial No.	1
D	300–30–10	Shell Assembly	1	P	1030–34–38	Cap Strap	1
E	(page 14)	Hose Assembly	1	R	300–90–8	Label, Caution Hose	1
F	300–32–43	Outlet Cap	1	S	300–90–18	Monitor Patient Tag	1
G	300–90–1	Ops./Maint. Manual	1	T	300–90–19	Label, Monitor Patient	1
H	300–90–2	Label, Serial No./U.L.	1	U	58–14	Cable Tie	1
J	300–90–3	Label, Display	1	W	300–90–20	Label, Step Down	1
K	300–90–4	Display Lexan	1				

6300 Sprinkle Road, Kalamazoo, MI 49001–9799 (800) 327–0770

DH 12/94 300–90–1 REV D